

Physics 2204
Worksheet – Using Kinematic Formulae

1. A Ferrari, moving at 20.0 km/h, accelerates to 230 km/h in 7.50 s. Find the displacement of the car and its acceleration.
2. Calculate the acceleration of an air bag if it deploys in 30 milliseconds (ms) and moves out a distance of 40.0 cm.
3. How far would a car move in 4.8 s if its velocity changed from 14.0 m/s to 16.0 m/s?
4. What is the displacement of a car accelerating from 15 m/s to 10.0 m/s in 8.0 s?
5. Apollo 10's re-entry speed was 39 897 km/h. How many seconds would it take the spacecraft to stop in a distance of 3.0×10^6 m?
6. A car traveling at 40.0 km/h accelerates at 2.3 m/s^2 for 2.7 s. How far has it traveled in that time? What was its final velocity?
7. What is the average acceleration of the Blue Flame speed car if its initial velocity is 1000.0 km/h and it comes to a stop in 2.0 km?
8. If you slow down to a stop at a rate of 0.80 m/s^2 by applying the brakes, how far do you travel when you initial velocity is 140 km/h?
9. The Superman roller coaster reaches a velocity of 100.0 km/h in 7.0 s. What is its average acceleration in m/s^2 ? How far has it traveled in that time?
10. A car is slowing down at a rate of 20.0 km/h/s. How far does it travel if its original velocity is 50.0 km/h and its final velocity is 5.0 m/s?
11. A car enters a tunnel at 24 m/s and accelerates steadily at 2.0 m/s^2 . At what velocity does it leave the tunnel 8.0 s later?
12. Two runners accelerate uniformly from rest at 1.40 m/s^2 for 8.00 s.
 - A) What is their final velocity?
 - B) How far do they travel?
13. A ball accelerates steadily down a ramp, starting from rest. It goes 2.0 m in 4.0 s.
 - A) What is its final velocity?
 - B) What is its acceleration?
14. A skateboarder accelerates steadily down a hill from 3.50 m/s to 11.4 m/s in 3.20 s.
 - A) What is the average acceleration for the interval?
 - B) What is the displacement?

